

## 2. Water Quality Standards

Water quality standards consist of three components: designated and existing uses, narrative and/or numeric water quality criteria necessary to support those uses, and an anti-degradation statement. Water quality standards serve two purposes. The first is to establish the water quality goals for a specific waterbody, and the second is to establish water quality-based treatment controls and strategies beyond the technology-based levels of treatment required by sections 301(b) and 306 of the Clean Water Act (USEPA, 1991). In Title 46, *Legislative Rule, Environmental Quality Board, Series 1, Requirements Governing Water Quality Standards*, West Virginia sets forth designated and existing uses as well as numeric and narrative water quality criteria for waters in the state. Appendix E of the *Requirements Governing Water Quality Standards* displays the numeric water quality criteria for a wide range of parameters, while narrative water quality criteria are largely contained in section 46-1-3 of the same document. Dissolved aluminum, total iron, total manganese, selenium, and pH have numeric criteria under the Aquatic Life and the Human Health use designation categories (Table 2-1). The listed waterbodies in the Guyandotte River watershed have been designated as having an Aquatic Life and/or Human Health use (WVDEP, 2003). Additionally, Pinnacle Creek (OG-124) is the only designated trout water in the Guyandotte River watershed (WVDEP, 2003).

**Table 2-1.** Applicable West Virginia water quality criteria

POLLUTANT	USE DESIGNATION				
	Aquatic Life				Human Health
	B1, B4		B2		A <sup>c</sup> , C <sup>c</sup>
	Acute <sup>a</sup>	Chronic <sup>b</sup>	Acute <sup>a</sup>	Chronic <sup>b</sup>	
Aluminum, dissolved (µg/L)	750	87	750	87	-
Iron, total (mg/L)	-	1.5	-	0.5	1.5
Manganese, total (mg/L)	-	-	-	-	1.0
Selenium (ug/L)	20	5	20	5	10
pH	No values below 6.0 or above 9.0	No values below 6.0 or above 9.0	No values below 6.0 or above 9.0	No values below 6.0 or above 9.0	No values below 6.0 or above 9.0
Fecal coliform bacteria	<b>Human Health Criteria</b> Maximum allowable level of fecal coliform content for Primary Contact Recreation (either MPN or MF) shall not exceed 200/100 mL as a monthly geometric mean based on not less than 5 samples per month; nor to exceed 400/100 mL in more than 10 percent of all samples taken during the month.				

Note: B1 = warm water fishery streams, B4 = wetlands, B2 = trout waters, A = public water supply, C = water contact recreation.

<sup>a</sup> One-hour average concentration not to be exceeded more than once every 3 years on the average.

<sup>b</sup> Four-day average concentration not to be exceeded more than once every 3 years on the average.

<sup>c</sup> Not to exceed.

Source: WVVQS, 2003

The narrative water quality criterion of 46 CSR 1 - 3.2.i. prohibits the presence of wastes in state waters that cause or contribute to significant adverse impact to the chemical, physical, hydrologic and biological components of aquatic ecosystems. Streams are listed as biologically impaired based on a survey of their benthic macroinvertebrate community. Benthic macroinvertebrate communities are rated using a multimetric index developed for use in wadeable streams of West Virginia. The West Virginia Stream Condition Index (WVSCI) is

composed of six metrics that were selected to maximize discrimination between streams with known impairments and reference streams. In general, streams with WVSCI scores less than 60.6 points are considered to be biologically impaired and are included on the 303(d) list.

There are 496 existing water quality stations in the Guyandotte River watershed. Tables 3a, 3b, 3c, 3d, 3e, and 3f in each of the Appendix A appendixes (A-1 through A-14) summarizes applicable water quality data for monitoring stations throughout the watershed. These results support the impairment listings for iron, aluminum, manganese, fecal coliform bacteria, and pH in specified stream segments located in Table 1 of Appendixes A-1 through A-14.